

Mitchell County
Bridge Nos. 100, 101, and 102 on SR 1002 (Crabtree Road)
over Big Crabtree Creek
W.B.S. No. 42333.1.2
STIP Project B-5158

**ADMINISTRATIVE ACTION
CATEGORICAL EXCLUSION**

UNITED STATES DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
AND
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

4/27/2017

DATE

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James McInnis, Jr., PE, Project Engineer
Project Development & Environmental Analysis Unit

4/27/2017

DATE

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John F. Sullivan, III, PE, Division Administrator
Federal Highway Administration

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CATEGORICAL EXCLUSION**

April 2017

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4/26/2017

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North Carolina Department of Transportation*

4/26/2017

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Angela Sanderson

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Angela Sanderson
Project Planning Engineer

PROJECT COMMITMENTS:

Mitchell County
Bridge Nos. 100, 101, & 102 on SR 1002 (Crabtree Road) Over Big Crabtree Creek
W.B.S. No. 42333.1.2

STIP Project B-5158

NCDOT Design Groups / Division Resident Construction Engineer

The NCWRC has identified Crabtree Creek as 'Wild Trout Waters' and capable of supporting a trout population. Therefore, a moratorium on all in-water work will be in place from October 15 to April 15 of any given year.

NCDOT Hydraulics Unit

The Hydraulics Unit will coordinate with the NC Floodplain Mapping Program (FMP), to determine status of project with regard to applicability of NCDOT'S Memorandum of Agreement, or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR).

NCDOT Division 13 Construction

This project involves construction activities on or adjacent to FEMA-regulated stream(s). Therefore, the Division shall submit sealed as-built construction plans to the Hydraulics Unit upon completion of project construction, certifying that the drainage structures and roadway embankment located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.

NCDOT Natural Environment Section (NES) – Biological Surveys Group

Concurrence on a biological conclusion of "May Effect, Not Likely to Adversely Affect" for the gray bat will be requested from the US Fish and Wildlife Service for Bridge 101 prior to requesting construction authorization.

NCDOT Human Environment Section (HES) – Archaeology Group

Additional archaeology work will be required and conducted should design plans change to encompass property outside of the currently defined APE.

Mitchell County
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 over Big Crabtree Creek
 W.B.S. No. 42333.1.2
 STIP Project B-5158

INTRODUCTION: STIP Project B-5158 involves the replacement of Bridge Nos. 100, 101 and 102 on SR 1002 (Crabtree Road) over Big Crabtree Creek in Mitchell County. See Figure 1 in the Appendix for a project vicinity map. No significant environmental impacts are anticipated. The project is classified as a categorical exclusion, as defined in 40 CFR 1508.4 and 23 CFR 771.117.

The proposed project is included in the 2016-2025 North Carolina State Transportation Improvement Program (STIP). Right of way acquisition and construction are scheduled for state fiscal years 2018 and 2020, respectively, in the draft 2017-2027 STIP.

I. PURPOSE AND NEED

The purpose of the proposed project is to replace three obsolete bridges.

Table 1 below presents information regarding the existing bridges.

Table 1 – Existing Bridge Data

Bridge No.	100	101	102
Crosses	Big Crabtree Creek	Big Crabtree Creek	Big Crabtree Creek
Year Built	1952 (reconstructed in 1973)	1966	1952
Clear Roadway Width	20.8 feet	24 feet	19.2 feet
Length	103 feet	130 feet	92 feet
Sufficiency Rating	65.75	51.24	52.35
Functionally Obsolete?	Yes (deck geometry appraisal of 3)	No	Yes (deck geometry appraisal of 2)
Structurally Deficient?	No	Yes (superstructure condition appraisal of 4)	No
Posted Weigh Limit	Not Posted	Not Posted	16 Tons Single Vehicles 22 Tons Truck Tractor Semi-Trailer

The superstructure and substructure of Bridge Nos. 100 and 102 have timber elements that are over sixty years old. Timber components have a typical life expectancy of between 40 to 50

years due to the natural deterioration rate of wood. Rehabilitation of a timber structure is generally practical only when a few elements are damaged or deteriorated. However, past a certain degree of deterioration, most timber elements become impractical to maintain and upon eligibility are programmed for replacement. Timber components of these bridges are experiencing an increasing degree of deterioration that can no longer be addressed by reasonable maintenance activities, therefore these bridges are approaching the end of their useful life.

The superstructure of Bridge No. 101 has concrete elements that are heavily deteriorated. Steel parts of the substructure are experiencing an increasing degree of section loss that can no longer be addressed by reasonable maintenance activities. Additionally, components of the concrete substructure have experienced an increasing degree of deterioration that can no longer be addressed by maintenance activities, therefore the bridge is approaching the end of its useful life.

II. EXISTING CONDITIONS

The three bridges are located within Mitchell County along SR 1002 (Crabtree Road) over Big Crabtree Creek. Big Crabtree Creek serves as the boundary line between Mitchell and Yancey Counties in the project area. Land use in the area is rural residential and consists of single-family and mobile-home residences on medium-size individual lots.

SR 1002 is classified as a rural local road in the Statewide Functional Classification System and it is not a National Highway System Route.

In the vicinity of the bridges, SR 1002 is 16 feet wide with two eight-foot lanes and three-foot grassed shoulders. The roadway for all three bridges is situated approximately seventeen feet above the creek bed.

There are no utilities attached to any of the existing structures, but overhead power and telephone lines cross the branch just west of Bridge Nos. 100 and 101. No utilities are adjacent to Bridge No. 102.

Current (2016) traffic volume along SR 1002 in the project area range between 554 to 981 vehicles per day (vpd). These volumes are expected to increase to between 708 and 1,212 vpd by the year 2036. The current volume includes one percent truck-tractor semi-trailers and ten percent dual-axle trucks. The existing speed limit is not posted in the project area and is the statutory 55 mph.

Eleven total accidents have been reported along SR 1002 in the vicinity of the bridges during the last ten-year period, with none fatal.

III. ALTERNATIVES

A. Preferred Alternative

Two ten-foot lanes and three-foot grass shoulders (seven-foot shoulders where guardrail is included) will be provided on SR 1002 at the approaches to each bridge.

Bridge 100

The preferred alternative is to replace existing Bridge No. 100 with a 24-inch two span cored slab bridge approximately 100-feet long providing a 27-foot 10-inch clear roadway width. The bridge will include two ten-foot lanes and two three-foot eleven-inch offsets. The roadway grade of the new structure will be approximately the same as the existing grade.

Construction will extend approximately 180-feet from the northwest end and approximately 200-feet from the southeast end of the new bridge. See Figure 2 in the Appendix for the proposed design plan. The roadway will be designed as a Rural Local Route using Sub Regional tier guidelines with a 30 mile-per-hour design speed.

Traffic will be maintained on-site during construction, the proposed bridge will be built in stages, allowing traffic to be shifted onto a portion of the bridge while the existing bridge is removed and the bridge completed.

Bridge 101

The preferred alternative is to replace existing Bridge No. 101 on new alignment with a 36-inch steel girder bridge approximately 130-feet long providing a 27-foot 10-inch clear roadway width. The bridge will include two ten-foot lanes, one two-foot offset and one five-foot ten-inch offset.

Construction will extend approximately 950-feet from the northeast end and approximately 350-feet from the southwest end of the new bridge. See Figure 3 in the Appendix for the proposed design plan. The roadway will be designed as a Rural Local Route using Sub Regional tier guidelines with a 30 mile-per-hour design speed.

Traffic will be maintained on-site during construction, the proposed bridge will be built on new location to the west of existing SR 1002 while traffic is maintained on the existing facility. The approach tie-ins on each end will be staged to maintain traffic during the tie-in operation.

Bridge 102

The preferred alternative is to replace existing Bridge No. 102 on new alignment with a 24-inch two span cored slab bridge approximately 120-feet long providing a 25-foot clear roadway width. The bridge will include two ten-foot lanes and two two-foot and six-inch offsets. The roadway grade of the new structure will be approximately the same as the existing grade.

Construction will extend approximately 200-feet from the northeast end of the new bridge and approximately 275-feet from the southwest end of the new bridge. See Figure 4 in the Appendix for the proposed design plan. The roadway will be designed as a Rural Local Route using Sub Regional tier guidelines with a 30 mile-per-hour design speed.

Traffic will be maintained on-site during construction, the proposed bridge will be built on new location to the east of existing SR 1002 while traffic is maintained on the existing facility. The approach tie-ins on each end will be staged to maintain traffic during the tie-in operation.

B. Alternatives Eliminated from Further Consideration

No Build – The no build alternative would result in eventually closing the road, which is unacceptable given the lack of alternate routes.

Alternatives for Bridge Nos. 100 and 101 – One additional alternative was considered for Bridge No. 100, an alternative to replace in place with a detour bridge adjacent to the existing bridge. This alternative was eliminated from consideration because it would require the cost of a temporary detour bridge with no reduction in impacts compared to the preferred alternative. Two additional alternatives were considered for Bridge No. 101, an alternative to replace in place with a detour bridge adjacent to the existing bridge and an alternative to replace in place with a detour bridge southwest of the proposed bridge on a detour alignment similar to the preferred new location alignment. Both alternatives were not feasible due to constructability issues with replacing the bridge in place.

Rehabilitation – Bridge No. 100 was built in 1952 and reconstructed in 1973. The timber materials within the bridge are reaching the end of their useful life. Cracking of the wearing surface and corrosion of the beams was evident. Rehabilitation would require replacing the timber components which would constitute effectively replacing the bridge.

Bridge No. 101 was built in 1966. The superstructure has concrete elements that are heavily deteriorated. Components of the concrete substructure have experienced an increasing degree of deterioration that can no longer be addressed by maintenance activities, therefore the bridge is approaching the end of its useful life.

Bridge No. 102 was built in 1952. Timber components of Bridge No. 102 are experiencing an increasing degree of deterioration that can no longer be addressed by reasonable maintenance activities, therefore the bridge is approaching the end of its useful life.

Offsite Detour – Due to a lack of acceptable alternate routes, an offsite detour is not feasible.

IV. ESTIMATED COSTS

The estimated costs are as follows:

	Construction	Right of Way	Utilities	Total Cost
Bridge No. 100	\$1,050,000	\$132,000	\$44,000	\$1,226,000
Bridge No. 101	\$1,600,000	\$145,000	\$9,000	\$1,754,000
Bridge No. 102	\$1,150,000	\$13,000	0	\$1,163,000
Project Total	\$3,800,000	\$290,000	\$53,000	\$4,143,000

The total cost for the project included in the 2117-2027 STIP is \$3,300,000. Of this total, \$300,000 is included for right of way acquisition and \$3,000,000 is included for construction.

V. ENVIRONMENTAL EFFECT OF PROPOSED ACTION

A. Natural Resources

A *Natural Resources Technical Report* (June 2015) was prepared for the project to identify any potential impacts to natural resource features. Jurisdictional area determinations and protected species surveys were conducted in the study area between January 26 and 28, 2015.

Physical Characteristics

Water Resources

Water resources in the study area are part of the French Broad River Basin [U.S. Geological Survey (USGS) Hydrologic Unit 06010108]. Four streams were identified in the study area (Table 1). There are no designated anadromous fish waters or Primary Nursery Areas present in the study area. There are no designated High Quality Waters (HQW) or water supply watersheds (WS-I or WS-II) within one mile downstream of the study area. The North Carolina 2014 Final 303(d) list of impaired waters does not identify the streams within the study area as impaired waters. There are no NCDWR benthic samples available within the study area or within one mile downstream.

Table 2 - Water Resources in the Study Area

Stream Name	Map ID	NCDWQ Index Number	Best Usage Classification
Big Crabtree Creek	Big Crabtree Creek	7-2-48	C, Tr
Unnamed Tributary (UT) to Big Crabtree Creek	SB	7-2-48	C, Tr
UT to Big Crabtree Creek	SC	7-2-48	C, Tr
UT to Big Crabtree Creek	SD	7-2-48	C, Tr

Waters of the United States

Four jurisdictional streams were identified in the study area (Table 3). The jurisdictional streams in the study area have been designated as cool water streams for the purposes of stream mitigation.

Table 3 – Jurisdictional Characteristics of Water Resources in the Study Area

Map ID	Impacts (ft) <i>Slope Stakes +40'</i>	Classification	Compensatory Mitigation Required	River Basin Buffer
Big Crabtree Creek	0	Perennial	Yes	Not Subject
SB	0	Perennial	Yes	Not Subject
SC	0	Perennial	Yes	Not Subject
SD	0	Perennial	Yes	Not Subject
Total	0			

Surface Waters and Wetlands

No wetlands were identified within the study area. Therefore, no wetland impacts are anticipated with this project.

Permits

The proposed project has been designated as a categorical exclusion for the purposes of National Environmental Policy Act documentation. As a result, a Nationwide Permit (NWP) 23 will likely be applicable. A NWP No. 33 may also apply for temporary construction activities such as stream dewatering, work bridges, or temporary causeways that are often used during bridge construction or rehabilitation. The US Army Corps of Engineers holds the final discretion as to what permit will be required to authorize project construction. If a Section 404 permit is required a Section 401 Water Quality Certification from the NC Division of Water Resources will also be needed.

In a letter dated April 10, 2015, the North Carolina Wildlife Resources Commission recommended a construction moratorium for trout from October 15 to April 15 for the project.

Federally-Protected Species

As of January 18, 2017 the United States Fish and Wildlife Service (USFWS) lists 13 federally-protected species for Mitchell and 11 federally-protected species for Yancey County (Table 3).

Table 3 – Threatened and Endangered Species Listed for Mitchell and Yancey Counties

Scientific Name	Common Name	Federal Status	County Listed	Habitat Present	Biological Conclusion
<i>Clemmys muhlenbergii</i>	Bog Turtle	T(S/A)	Both	No	Not Required
<i>Glaucomys sabrinus coloratus</i>	Carolina Northern Flying Squirrel	E	Both	No	No Effect
<i>Myotis grisescens</i>	Gray Bat	E	Both	Yes	May Effect, not likely to Adversely Affect
<i>Myotis septentrionalis</i>	Northern long-eared bat	T	Both	Yes	May Effect+
<i>Alasmidonta</i>	Appalachian Elktoe	E	Both	Yes	No Effect

<i>raveneliana</i>					
<i>Bombus affinis</i>	Rusty-patched bumble bee*	E	Both		
<i>Microhexura montivaga</i>	Spruce-fir Moss Spider	E	Both	No	No Effect
<i>Solidago spithamaea</i>	Blue Ridge Goldenrod	T	Mitchell	No	No Effect
<i>Liatris helleri</i>	Heller's Blazing Star*	E	Mitchell	No	No Effect
<i>Hedyotis purpurea varmontana</i>	Roan Mountain Bluet	E	Both	No	No Effect
<i>Geum radiatum</i>	Spreading Avens	E	Both	No	No Effect
<i>Spiraea virginiana</i>	Virginia Spiraea	T	Both	Yes	No Effect
<i>Gymnoderma lineare</i>	Rock Gnome Lichen	E	Both	No	No Effect

E – Endangered

T – Threatened

T (S/A) – Threatened due to similarity of appearance

†- May Affect-this project is in compliance with USFWS 4(d) rules

* - Historic record (the species was last observed in the county more than 50 years ago)

Habitat exists in the project area for Appalachian elktoe and Virginia spiraea. Surveys for Appalachian elktoe were conducted in September 2009. No Appalachian elktoe or other mussels were found during these surveys. No Virginia spiraea were observed during field investigations conducted in January 2015. A review of NCNHP records, updated January 2015, indicates no known Virginia spiraea occurrence within one mile of the study area.

NCDOT has determined the proposed action does not require separate consultation for the northern long-eared bat (*Myotis septentrionalis*) on the grounds the proposed action is consistent with the final Section 4(d) rule, codified at 50 C.F.R. § 17.40(o) and effective February 16, 2016. NCDOT may presume its determination is informed by best available information and consider Section 7 responsibilities fulfilled for the northern long-eared bat.

The gray bat (*Myotis grisescens*) is listed by USFWS as “probable/potential” in Mitchell County. According to the North Carolina Natural Heritage Program Biotics Database, most recently updated in January 2017, gray bat has not been documented in Mitchell County. In summer 2016, North Carolina Wildlife Resources Commission staff observed gray bat roosting in bridges in western North Carolina. Their records indicate the closest known occurrence of gray bat is approximately 11 miles west of the project site (EO ID 36756). EO 36756 represents an observation record over the Cane River.

Bridge Nos. 100 and 102 both have a timber floor with I-beam superstructure and timber guardrails. Both bridges are approximately 20 feet high. Early evidence from several structure surveys suggests the gray bat prefers tall concrete bridges. Timber bridges (which are often slathered in creosote) with low clearances tend to stay cool and damp, and are not typically preferred roosting locations by bats. Bats prefer dry, elevated roost sites. Therefore, no suitable roosting habitat for gray bat is present at Bridge No. 100 or Bridge No. 102. Based on the type of bridge (timber and steel) for Bridge No. 100 and Bridge No. 102, the proposed replacement of these bridges will have “No Effect” on gray bat.

Bridge No. 101 has a concrete floor with I-beam superstructure, and concrete guardrails. The overall height of the structure is approximately 24 feet. Given the above evidence that bats prefer tall concrete bridges, the proposed replacement of Bridge No. 101 will have a biological conclusion of “May Effect, Not Likely to Adversely Affect” for gray bat. Concurrence will be requested from USFWS for this species for Bridge 101 prior to requesting construction authorization.

Bald Eagle and Golden Eagle Protection Act

A desktop-GIS assessment of the project study area, as well as the area within a 1.13-mile radius (one mile plus 660 feet) of the project limits, was performed on April 2, 2015 using 2014 and 2015 color aerials. No water bodies large enough or sufficiently open to be considered potential feeding sources were identified. Since there is no foraging habitat within the review area, a survey of the project study area and the area within 660 feet of the project limits was not conducted. Additionally, a review of the NC Natural Heritage Program database on February 19, 2015 revealed no known occurrences of this species within one mile of the project study area. Due to the lack of habitat, known occurrences, and minimal impact anticipated for this project, it has been determined this project will not affect this species.

B. Cultural Resources

Section 106 Compliance Guidelines

This project is subject to compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, and implemented by the Advisory Council on Historic Preservation’s Regulations for Compliance with Section 106, codified at Title 36 CFR Part 800. Section 106 requires Federal agencies to take into account the effect of their undertakings (federally funded, licensed, or permitted) on properties included in or eligible for inclusion in the National Register of Historic Places and afford the Advisory Council a reasonable opportunity to comment on such undertakings.

Historic Architecture

Under the provisions of a programmatic agreement between FHWA, NCDOT, HPO, OSA and the Advisory Council on Historic Preservation, NCDOT architectural historians reviewed the proposed project and determined no surveys are required (see form dated April 2, 2016 in the Appendix).

Archaeology

The NCDOT Archaeology Group conducted an archaeological investigation for the proposed project. The archaeological investigations show no significant archaeological sites are within the project’s area of potential effect (APE). As a result of the current investigation, no further archaeological work is required for replacement of Bridge Nos. 100, 101, nor 102. However, additional work will be required should design plans change to encompass property outside of the currently defined APE. Documentation of these recommendations and conclusions are contained in the Appendix.

C. Community Impacts

A *Community Impact Assessment* (June 2015) was prepared for the project to identify and assess the potential for community impacts as a result of the project. No adverse impact on families or communities is anticipated. Right-of-way acquisition will be limited. At the site of Bridge No. 100, a mobile home will be within the construction limits and will need to be shifted on the property or relocated. Further assessment will be made during design and right of way acquisition.

No adverse effect on public facilities or services is expected. The project is not expected to adversely affect social, economic, or religious opportunities in the area.

The project is not in conflict with any plan, existing land use, or zoning regulation. No change in land use is expected to result from the construction of the project.

The Farmland Protection Policy Act (FPPA) requires all federal agencies or their representatives to consider the potential impact to prime farmland of all land acquisition and construction projects. There are no soils classified as prime, unique, state important or locally important farmland in the vicinity of the project. Therefore, no impacts to FPPA eligible soils are anticipated.

Executive Order 12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations directs all federal agencies or their representatives to identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations, to the greatest extent practicable and permitted by law. The project will not have a disproportionately high and adverse human health and environmental effect on any minority or low-income population.

D. Noise & Air Quality

The project is located in Mitchell County, which has been determined to comply with the National Air Quality Standards. The proposed project is located in an attainment area; therefore, 40 CFR Parts 51 and 93 are not applicable. This project is not anticipated to create any adverse effects on the air quality of this attainment area.

This project will not result in any meaningful changes in traffic volume, vehicle mix, location of the existing facility, or any other factor that would cause an increase in emissions impacts relative to the no-build alternative. As such FHWA has determined this project will generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special mobile source air toxics (MSAT) concerns. Consequently, this project is exempt from analysis for MSAT's.

Noise levels may increase during project construction; however, these impacts are not expected to be substantial considering the relatively short-term nature of construction noise and the limitation of construction to daytime hours. The transmission loss characteristics of

nearby natural elements and man-made structures are believed to be sufficient to moderate the effects of intrusive construction noise.

This project has been determined to be a Type III Noise Project and therefore, no traffic noise analysis is required to meet the requirements of 23 CFR 772.

E. Section 4(f)/Section 6(f)

Section 4(f) of the U.S. Department of Transportation Act of 1966 specifies that publicly-owned land from a public park, recreation area, wildlife and waterfowl refuge, and all historic sites of national, state, and local significance may be used for federal projects only if: a) there is no feasible and prudent alternative to the use of the land; and b) the project includes all possible planning to minimize harm to 4(f) lands resulting from such use. This project will not impact any resources protected by Section 4(f) of the USDOT Act of 1966, as amended.

Section 6(f) of the Land and Water Conservation Fund Act of 1965 stipulates that property acquired or developed with the assistance of the Fund may not be converted to a use other than public recreation unless suitable replacement property is provided. No properties acquired or developed with the assistance of the Land and Water Conservation Fund exist in the project area.

F. Hazardous Materials

An examination of local, state, and federal regulatory records revealed two sites with a Recognized Environmental Concern (REC) within the project limits. RECs are most commonly underground storage tanks, dry cleaning solvents, landfills and hazardous waste disposal areas. The *GeoTechnical Pre-Scoping Report* (April 2010) prepared for the project stated that each of the sites are anticipated to present low geoenvironmental impacts to the project.

G. Floodplains

Mitchell County is a participant in the National Flood Insurance Program. There are no practical alternatives to crossing the floodplain area. Any shift in alignment will result in an impact area of about the same magnitude. The proposed project is not anticipated to increase the level or extent of upstream flood potential.

The Hydraulics Unit will coordinate with the NC Floodplain Mapping Program (FMP), to determine status of project with regard to applicability of NCDOT'S Memorandum of Agreement, or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR).

This project involves construction activities on or adjacent to FEMA-regulated stream(s). Therefore, the Division shall submit sealed as-built construction plans to the Hydraulics Unit upon completion of project construction, certifying that the drainage structures and roadway

embankment located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.

VIII. COORDINATION & AGENCY COMMENTS

NCDOT has sought input from the following agencies as a part of the project development: U.S. Army Corps of Engineers, NC Department of Environment & Natural Resources, U.S. Fish & Wildlife Service, N.C Wildlife Resource Commission, N.C. Division of Parks & Recreation, North Carolina State Historic Preservation Office, and both the Mitchell and Avery County Planning Departments. Copies of correspondence provided by other agencies is included in the Appendix.

IX. PUBLIC INVOLVEMENT

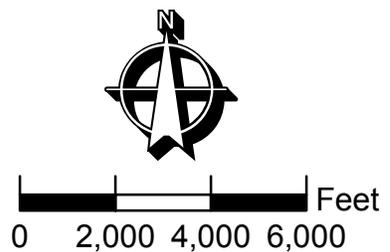
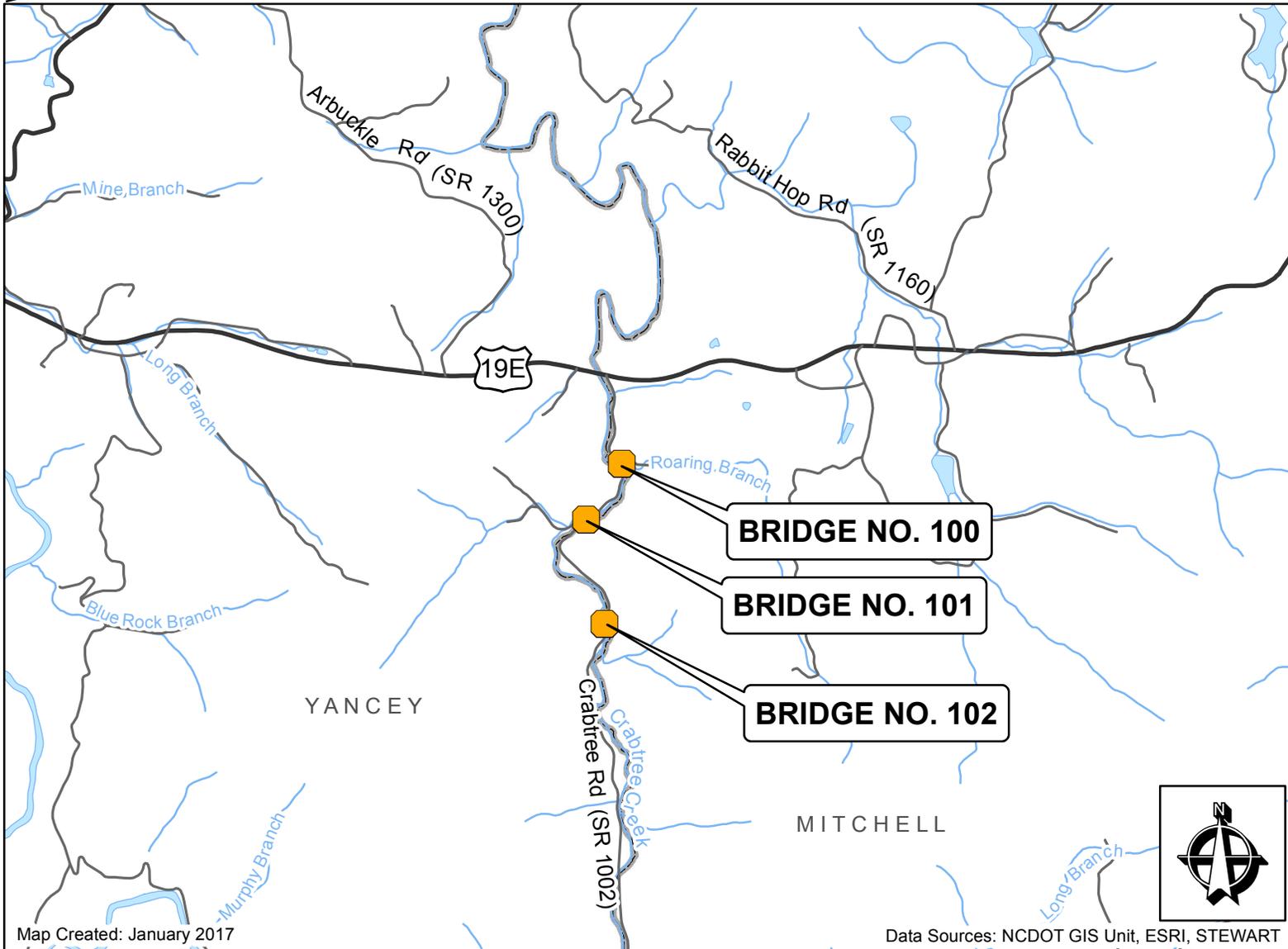
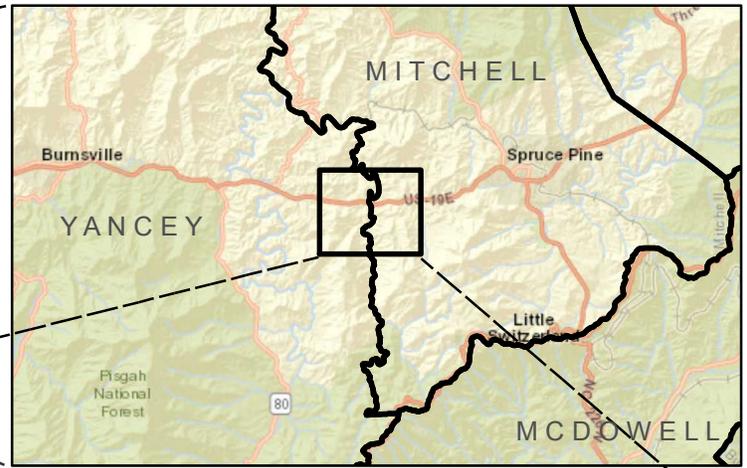
A project informational postcard was sent to all property owners affected directly by this project. Property owners were invited to comment. Two comments were received by residential and commercial property owners. Both property owners were in favor of the bridge replacements and were in support of maintaining traffic on-site during construction to minimize disruptions to traffic flow.

There is not substantial controversy on social, economic, or environmental grounds concerning the project.

X. CONCLUSION

On the basis of the above discussion, it is concluded no significant environmental impacts will result from implementation of the project. The categorical exclusion classification, as defined in 40 CFR 1508.4 and 23 CFR 771.117, is therefore appropriate.

APPENDIX



	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS UNIT
BRIDGE NOS. 100, 101, & 102 ON SR 1002 OVER CRABTREE CREEK MITCHELL & YANCEY COUNTIES STIP PROJECT B-5158	
PROJECT VICINITY	FIGURE 1

B.17/99

MITCHELL COUNTY B-5158 (BRIDGE 100) ALTERNATIVE 1 STAGE CONSTRUCTION

ANTICIPATED DESIGN DATA

DESIGN STANDARDS	=	SUBREGIONAL TIER
DESIGN SPEED	=	30 MPH
ADT 2016	=	981
ADT 2036	=	1212
DHV	=	12%
D	=	60%
DUAL	=	10%
TTST	=	1%
MIN. RADIUS	=	250'
MAX GRADE	=	14%
K SAG	=	37
K CREST	=	19
SE MAX	=	0.04
CLASSIFICATION	=	RURAL LOCAL
TERRAIN	=	MOUNTAINOUS
DESIGN EXCEPTIONS	=	NONE

PROJECT REFERENCE NO. <i>B-5158</i>	SHEET NO. <i>15</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
 <small>1111 S. State St. Suite 100 Raleigh, NC 27601 919.336.3750 www.stewartinc.com</small>	 <small>14 N. EAST WILKINSON ROAD, SUITE 100 RALEIGH, NORTH CAROLINA 27601 919.781-4626 VOICE 919.781-4665 FAX</small>



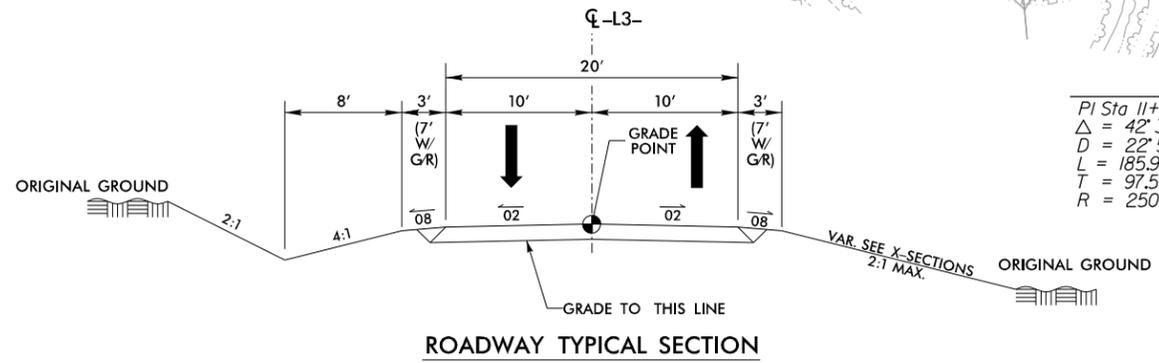
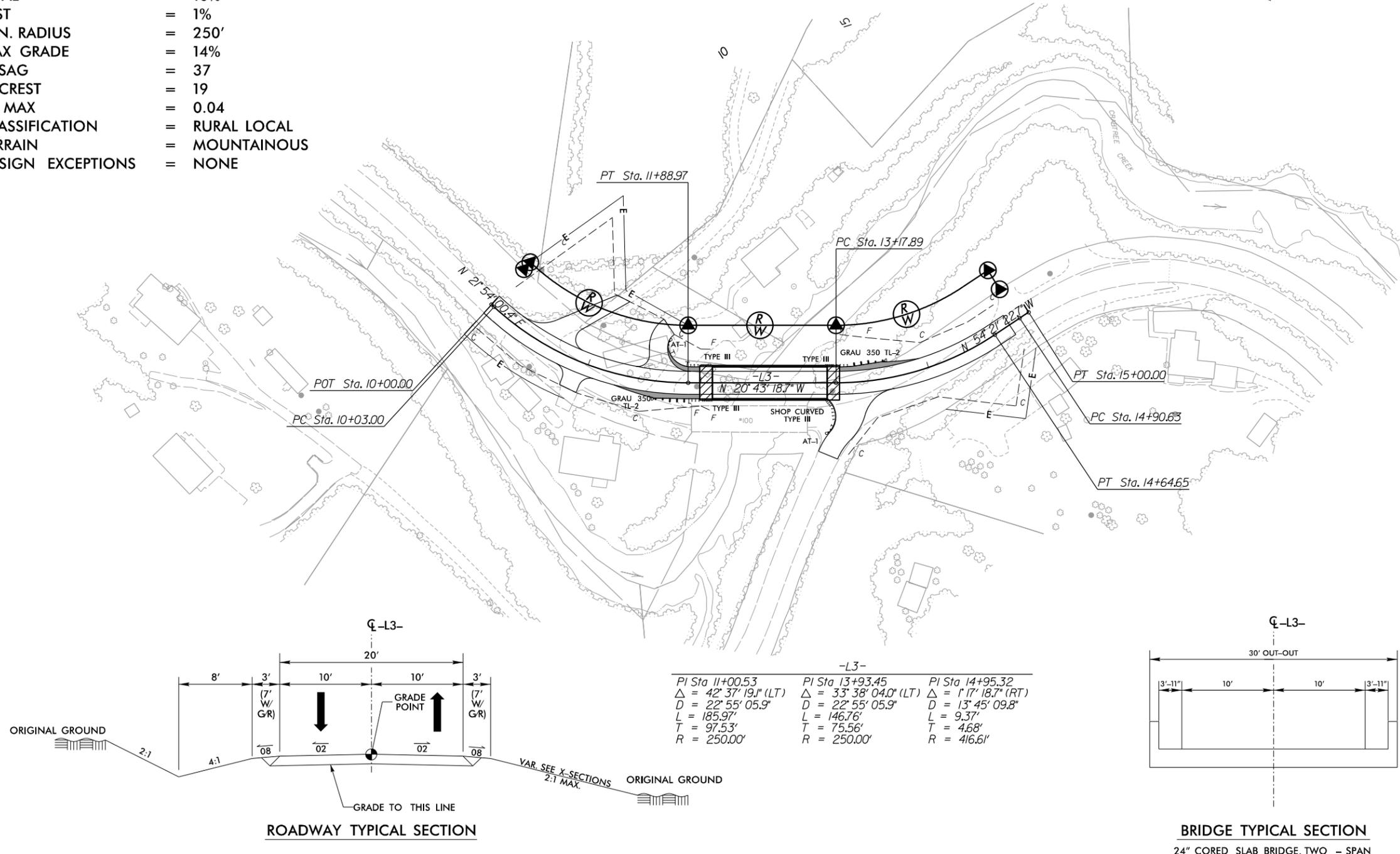
FOR -L3- PROFILE SEE SHEET 16

BRIDGE APPROACH SLAB

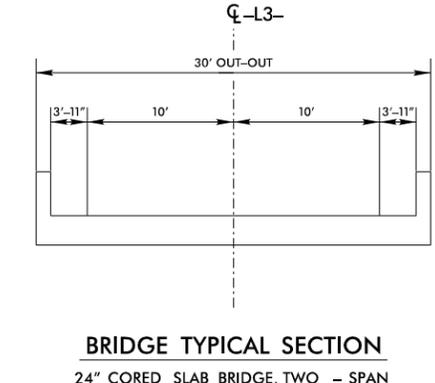
GRAPHIC SCALE: 1" = 50'



Figure 2



-L3-		
<i>PI Sta 11+00.53</i> $\Delta = 42^\circ 37' 19.1''$ (LT) $D = 22^\circ 55' 05.9''$ $L = 185.97'$ $T = 97.53'$ $R = 250.00'$	<i>PI Sta 13+93.45</i> $\Delta = 33^\circ 38' 04.0''$ (LT) $D = 22^\circ 55' 05.9''$ $L = 146.76'$ $T = 75.56'$ $R = 250.00'$	<i>PI Sta 14+95.32</i> $\Delta = 1^\circ 17' 18.7''$ (RT) $D = 13^\circ 45' 09.8''$ $L = 9.37'$ $T = 4.68'$ $R = 416.61'$



BRIDGE TYPICAL SECTION
24" CORED SLAB BRIDGE, TWO - SPAN

REVISIONS

5/26/2016 B5158_r.dwg_psh15.dgn
11:51:10

B.17/99

ANTICIPATED DESIGN DATA

DESIGN STANDARDS	=	SUBREGIONAL TIER
DESIGN SPEED	=	30 MPH
ADT 2016	=	554
ADT 2036	=	708
DHV	=	12
D	=	60
DUAL	=	13
TTST	=	2
MIN. RADIUS	=	250'
MAX GRADE	=	14%
K SAG	=	37
K CREST	=	19
SE MAX	=	0.04
CLASSIFICATION	=	RURAL LOCAL
TERRAIN	=	MOUNTAINOUS
DESIGN EXCEPTIONS	=	NONE

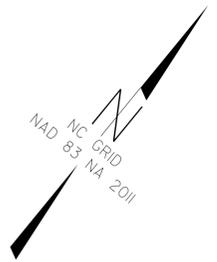
MITCHELL COUNTY

B-5158 (BRIDGE 101)

ALTERNATE 3

NEW LOCATION

PROJECT REFERENCE NO.	B-5158	SHEET NO.	10
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
STEWART		MOFFATT & NICHOL	



FOR -L6- PROFILE SEE SHEET 14

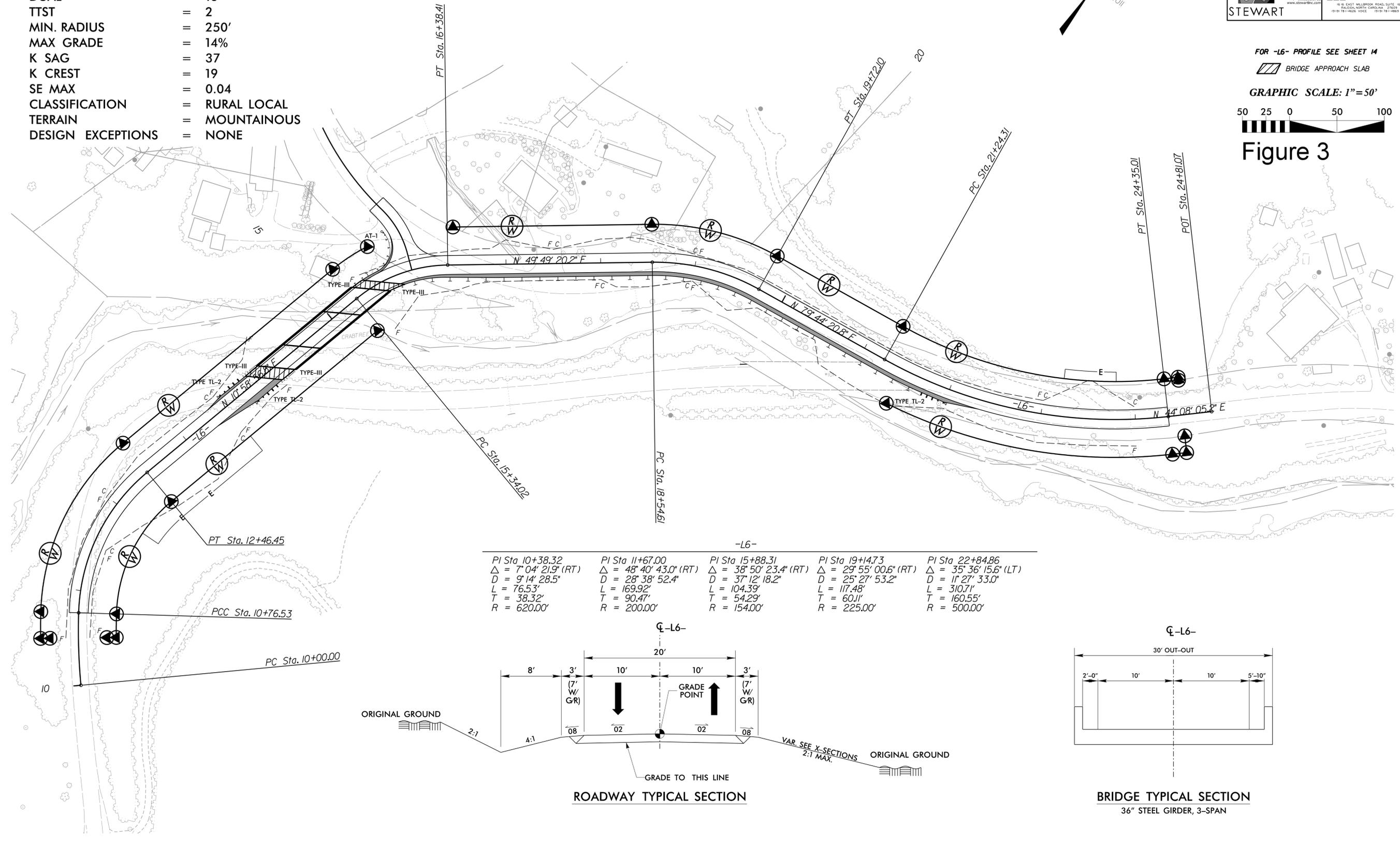


GRAPHIC SCALE: 1"=50'

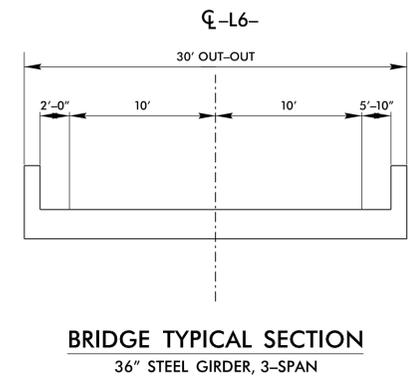
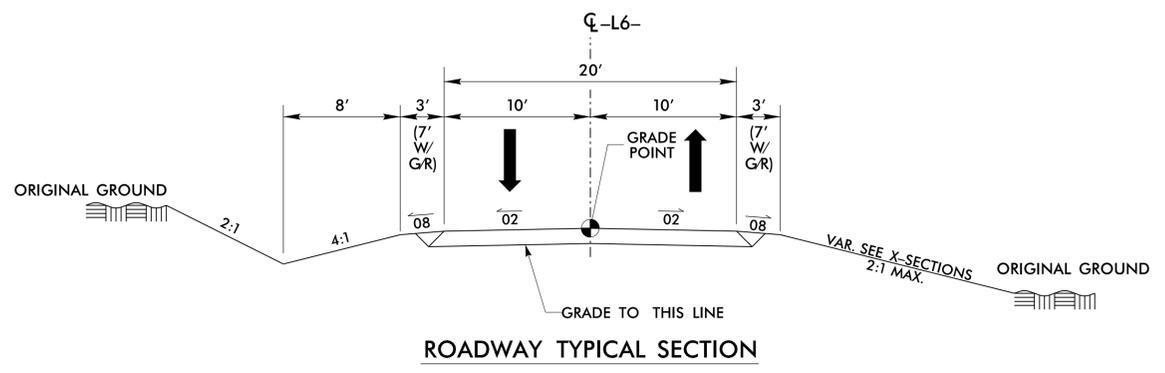


Figure 3

REVISIONS



PI Sta 10+38.32 $\Delta = 7^{\circ} 04' 21.9''$ (RT) D = 9' 14" 28.5" L = 76.53' T = 38.32' R = 620.00'	PI Sta 11+67.00 $\Delta = 48^{\circ} 40' 43.0''$ (RT) D = 28' 38" 52.4" L = 169.92' T = 90.47' R = 200.00'	PI Sta 15+88.31 $\Delta = 38^{\circ} 50' 23.4''$ (RT) D = 37' 12" 18.2" L = 104.39' T = 54.29' R = 154.00'	PI Sta 19+14.73 $\Delta = 29^{\circ} 55' 00.6''$ (RT) D = 25' 27" 53.2" L = 117.48' T = 60.11' R = 225.00'	PI Sta 22+84.86 $\Delta = 35^{\circ} 36' 15.6''$ (LT) D = 11' 27" 33.0" L = 310.71' T = 160.55' R = 500.00'
--	---	---	---	--



4/25/2017 10:51:58_rdu_psh10.dgn

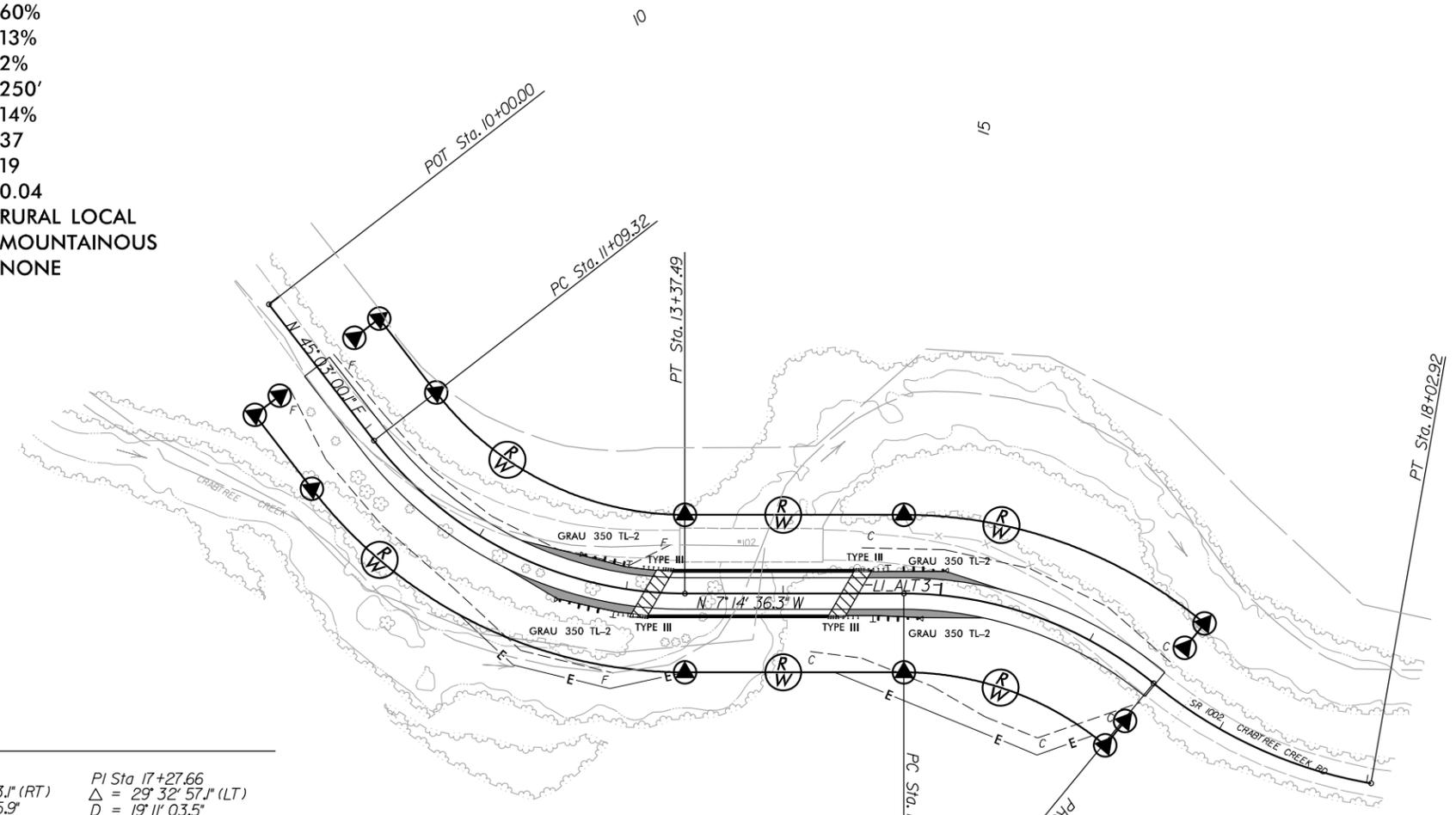
B.17/99

MITCHELL COUNTY B-5158 (BRIDGE 102) ALTERNATIVE 2 NEW ALIGNMENT - EAST

PROJECT REFERENCE NO. <i>B-5158</i>	SHEET NO. <i>04</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
 STEWART	 MOFFATT & NICHOL

ANTICIPATED DESIGN DATA

DESIGN STANDARDS	=	SUBREGIONAL TIER
DESIGN SPEED	=	30 MPH
ADT 2016	=	554
ADT 2036	=	708
DHV	=	12%
D	=	60%
DUAL	=	13%
TTST	=	2%
MIN. RADIUS	=	250'
MAX GRADE	=	14%
K SAG	=	37
K CREST	=	19
SE MAX	=	0.04
CLASSIFICATION	=	RURAL LOCAL
TERRAIN	=	MOUNTAINOUS
DESIGN EXCEPTIONS	=	NONE



FOR -L1_ALT2- PROFILE SEE SHEET 05

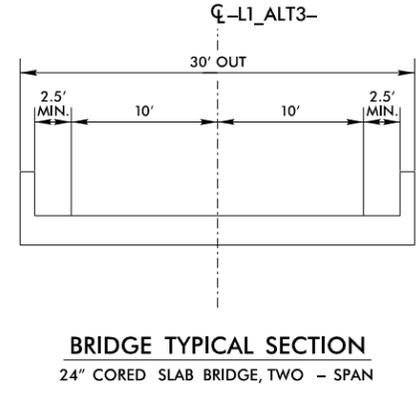
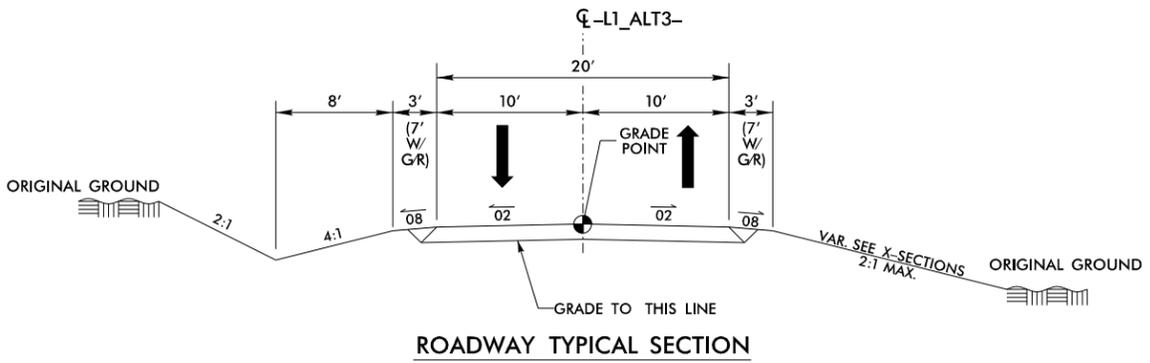
BRIDGE APPROACH SLAB

GRAPHIC SCALE: 1" = 50'

Figure 4

-L1_ALT3-

<i>PI Sta 12+32.04</i> $\Delta = 52^\circ 17' 36.4" (LT)$ $D = 22^\circ 55' 05.9"$ $L = 228.17'$ $T = 122.73'$ $R = 250.00'$	<i>PI Sta 15+66.41</i> $\Delta = 39^\circ 26' 33.1" (RT)$ $D = 22^\circ 55' 05.9"$ $L = 172.10'$ $T = 89.62'$ $R = 250.00'$	<i>PI Sta 17+27.66</i> $\Delta = 29^\circ 32' 57.1" (LT)$ $D = 19^\circ 11' 03.5"$ $L = 154.03'$ $T = 78.77'$ $R = 298.66'$
---	--	--



REVISIONS

5/26/2016 B5158_r.dwg psh04.dgn

09-11-0030

NO SURVEY REQUIRED FORM**PROJECT INFORMATION**

Project No.: B-5158 *County:* Mitchell
WBS No.: 42333 *Document:* CE/PCE
F.A. No.: BRZ-1002(28) *Funding:* State Federal

Federal (USACE) Permit Required? Yes No *Permit Type:* Nationwide

Project Description: Replace Bridge Nos. 100, 101 and 102 on SR 1002 over Crabtree Creek. No design plans available.

SUMMARY OF CULTURAL RESOURCES REVIEW

Brief description of review activities, results of review, and conclusions:

Review consisted of background research and a visual reconnaissance of the study area. There are no previously recorded archaeological sites in the study area, it has not been reviewed by the State Historic Preservation Office (HPO), and it has not been previously surveyed for archaeological sites. The project includes the replacement of three bridges over Crabtree Creek, and historic maps (1902 soil map, 1902 topographic map, 1938 highway map, 1952 soil map, 1960 topographic map) show there were no bridges at these locations until after 1902 and before 1938. Visual reconnaissance of the three bridges and surrounding areas identified landforms with a low probability for prehistoric archaeological sites.

Brief Explanation of why the available information provides a reliable basis for reasonably predicting that there are no unidentified historic properties in the APE:

The project will not impact any sites that are eligible for the National Register of Historic Places (NRHP). Historic maps do not show any structures in the project areas since 1902. The landforms in the study area have low potential for prehistoric archaeological sites. See attached memo that describes the background research and field reconnaissance.

SUPPORT DOCUMENTATION

See attached: Map(s) Previous Survey Info Photos Correspondence
 Photocopy of County Survey Notes

FINDING BY NCDOT CULTURAL RESOURCES PROFESSIONAL**NO SURVEY REQUIRED**

Caleb Smith

3/8/2010

NCDOT Cultural Resources Specialist

Date

15-03-0050



HISTORIC ARCHITECTURE AND LANDSCAPES NO SURVEY REQUIRED FORM

This form only pertains to Historic Architecture and Landscapes for this project. It is not valid for Archaeological Resources. You must consult separately with the Archaeology Group.

PROJECT INFORMATION

Project No:	B-5158	County:	Mitchell
WBS No.:	42333.1.2	Document Type:	PCE
Fed. Aid No:		Funding:	<input checked="" type="checkbox"/> State <input type="checkbox"/> Federal
Federal Permit(s):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Permit Type(s):	unknown
Project Description: Replace Bridge No. 100 on SR 1002 (Crabtree Creek Rd) over Crabtree Creek.			

SUMMARY OF HISTORIC ARCHITECTURE AND LANDSCAPES REVIEW

Description of review activities, results, and conclusions:

Review of HPO quad maps, relevant background reports, historic designations roster, and indexes was undertaken on April 2, 2015. Based on this review there are no NR, DE, LL, SL, or SS in the project area. This project was reviewed in July 2010. A site visit was conducted. It was determined that no properties present were eligible for National Register listing. No significant changes have occurred to the project area in the intervening years; therefore, no survey is required.

Why the available information provides a reliable basis for reasonably predicting that there are no unidentified significant historic architectural or landscape resources in the project area:

Using HPO GIS website and Mitchell County ArcGIS website provides reliable information regarding the structures in the APE. These combined utilities are considered valid for the purposes of determining the likelihood of historic resources being present.

SUPPORT DOCUMENTATION

Map(s) Previous Survey Info. Photos Correspondence Design Plans

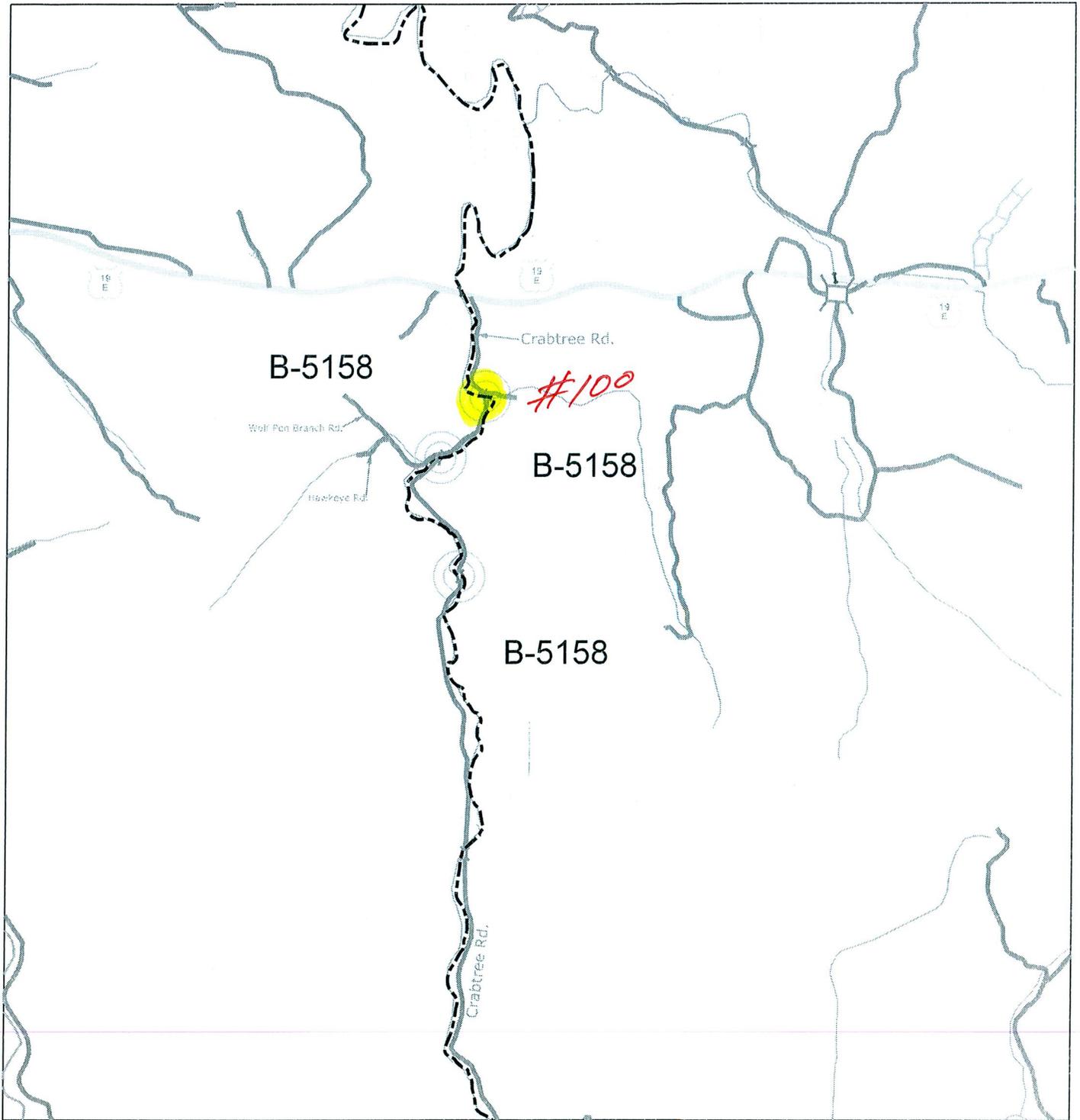
FINDING BY NCDOT ARCHITECTURAL HISTORIAN

Historic Architecture and Landscapes -- NO SURVEY REQUIRED

Shelby Reap
NCDOT Architectural Historian

April 2, 2015
Date



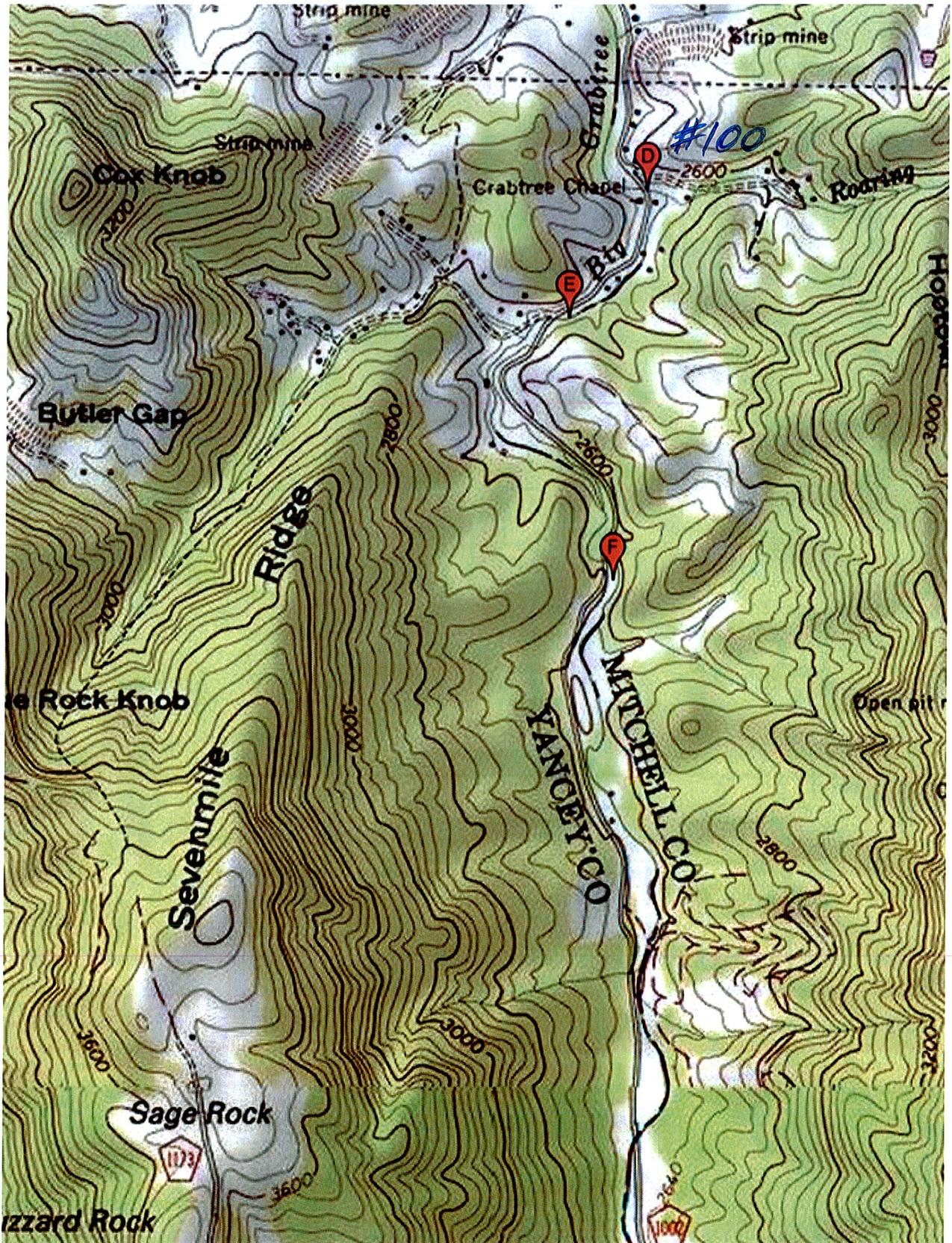


● — ● Denotes off-site detour



	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS BRANCH
	MITCHELL COUNTY REPLACE BRIDGE NO. 100, 101, AND 102 ON SR 1002 OVER CRABTREE CREEK B-5158

Figure 1



Google

533# /

15-03-0049



HISTORIC ARCHITECTURE AND LANDSCAPES NO SURVEY REQUIRED FORM

This form only pertains to Historic Architecture and Landscapes for this project. It is not valid for Archaeological Resources. You must consult separately with the Archaeology Group.

PROJECT INFORMATION

Project No:	B-5158	County:	Mitchell
WBS No.:	42333.1.2	Document Type:	PCE
Fed. Aid No.:		Funding:	<input checked="" type="checkbox"/> State <input type="checkbox"/> Federal
Federal Permit(s):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Permit Type(s):	unknown
<u>Project Description:</u> Replace Bridge No. 101 on SR 1002 (Crabtree Creek Rd) over Crabtree Creek.			

SUMMARY OF HISTORIC ARCHITECTURE AND LANDSCAPES REVIEW

<p><u>Description of review activities, results, and conclusions:</u> Review of HPO quad maps, relevant background reports, historic designations roster, and indexes was undertaken on April 2, 2015. Based on this review there are no NR, DE, LL, SL, or SS in the project area. This project was reviewed in July 2010. A site visit was conducted. It was determined that no properties present were eligible for National Register listing. No significant changes have occurred to the project area in the intervening years; therefore, no survey is required.</p> <p><u>Why the available information provides a reliable basis for reasonably predicting that there are no unidentified significant historic architectural or landscape resources in the project area:</u> Using HPO GIS website and Mitchell County ArcGIS website provides reliable information regarding the structures in the APE. These combined utilities are considered valid for the purposes of determining the likelihood of historic resources being present.</p>
--

SUPPORT DOCUMENTATION

Map(s)
 Previous Survey Info.
 Photos
 Correspondence
 Design Plans

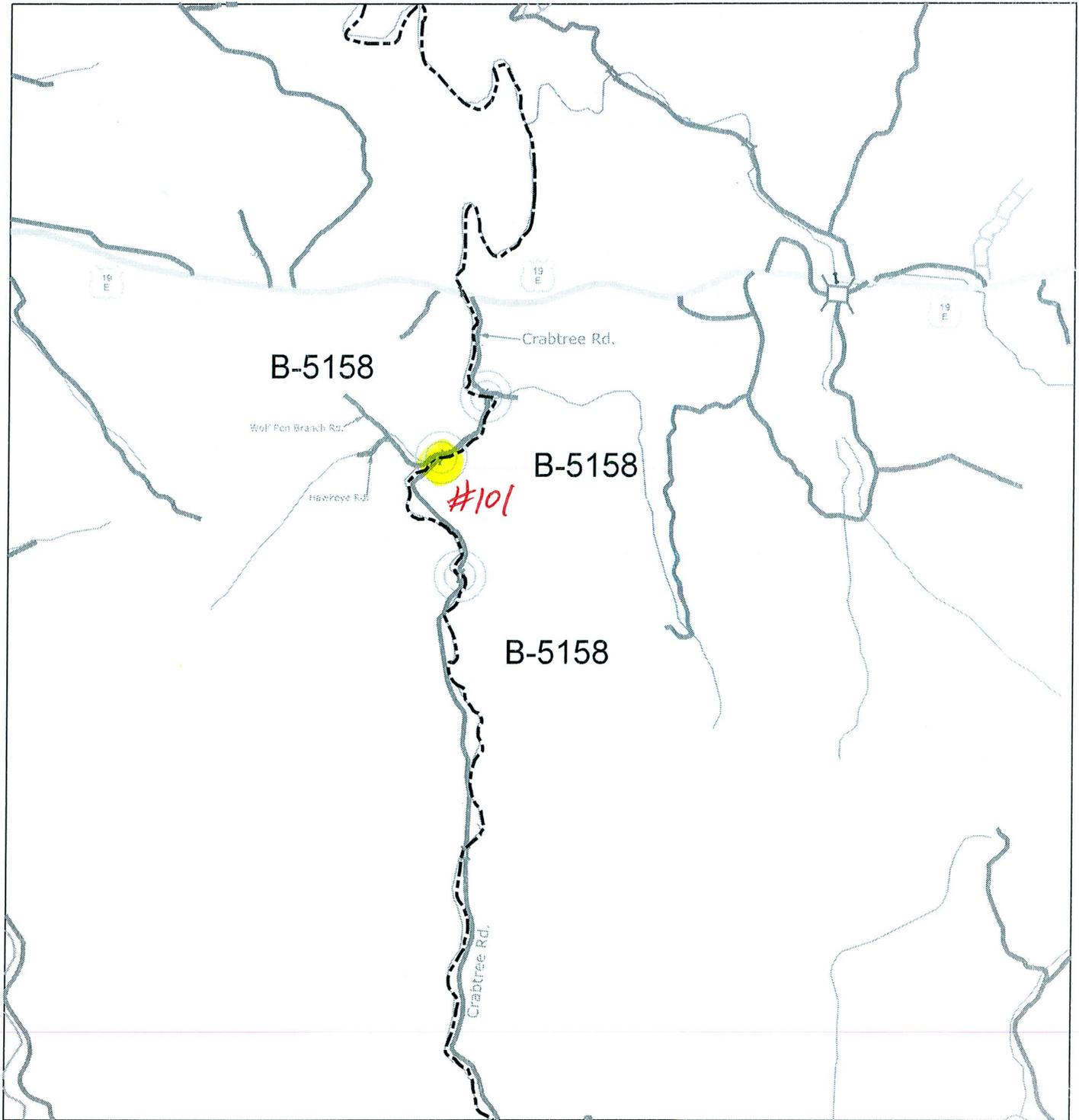
FINDING BY NCDOT ARCHITECTURAL HISTORIAN

Historic Architecture and Landscapes -- NO SURVEY REQUIRED

 NCDOT Architectural Historian

 Date



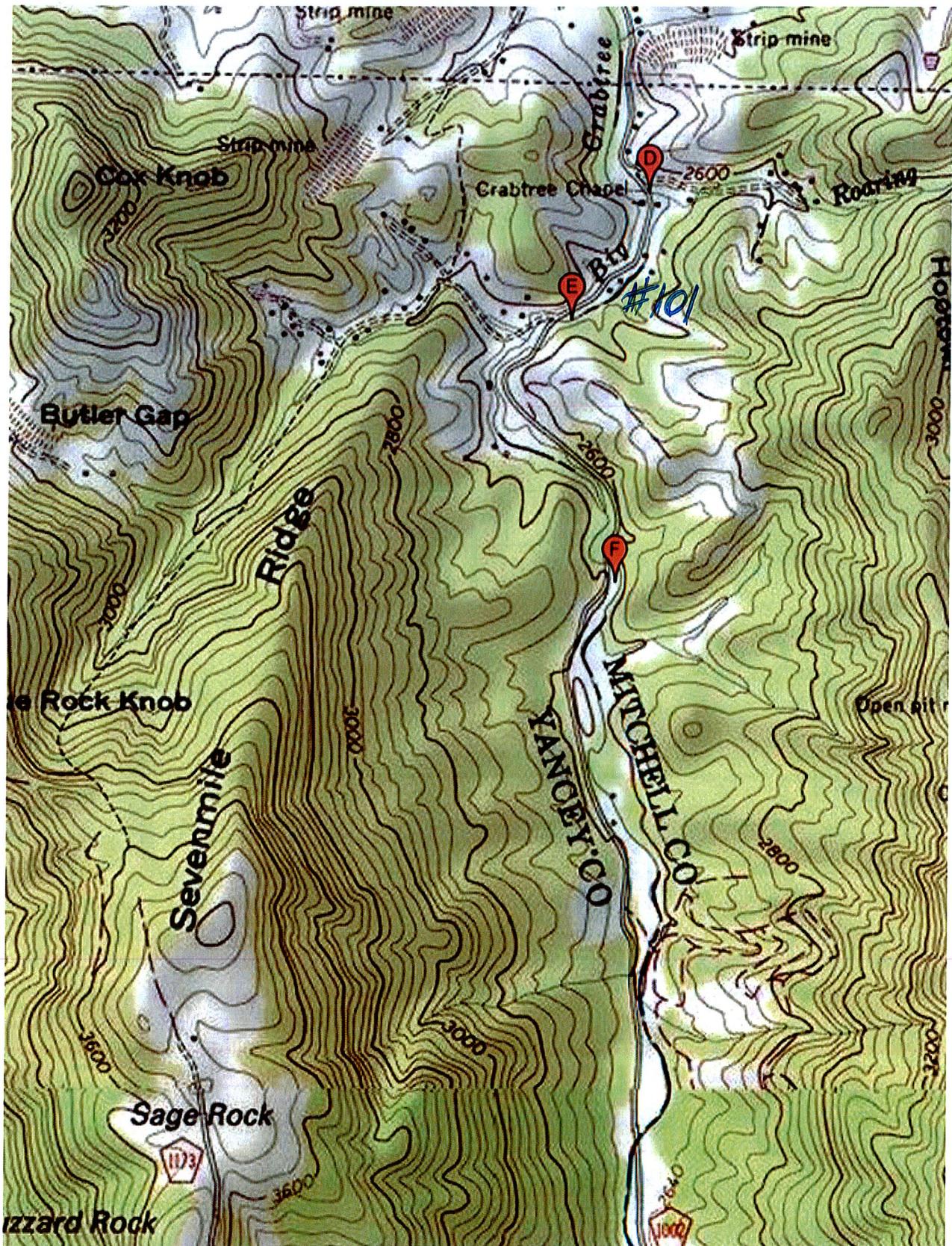


● — ● Denotes off-site detour



	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS BRANCH
	MITCHELL COUNTY REPLACE BRIDGE NO. 100, 101, AND 102 ON SR 1002 OVER CRABTREE CREEK B-5158

Figure 1



Google

533# /

15-03-0051



HISTORIC ARCHITECTURE AND LANDSCAPES NO SURVEY REQUIRED FORM

This form only pertains to Historic Architecture and Landscapes for this project. It is not valid for Archaeological Resources. You must consult separately with the Archaeology Group.

PROJECT INFORMATION

Project No:	B-5158	County:	Mitchell
WBS No.:	42333.1.2	Document Type:	PCE
Fed. Aid No:		Funding:	<input checked="" type="checkbox"/> State <input type="checkbox"/> Federal
Federal Permit(s):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Permit Type(s):	unknown
<u>Project Description:</u> Replace Bridge No. 100 on SR 1002 (Crabtree Creek Rd) over Crabtree Creek.			

SUMMARY OF HISTORIC ARCHITECTURE AND LANDSCAPES REVIEW

Description of review activities, results, and conclusions:

Review of HPO quad maps, relevant background reports, historic designations roster, and indexes was undertaken on April 2, 2015. Based on this review there are no NR, DE, LL, SL, or SS in the project area. This project was reviewed in July 2010. A site visit was conducted. It was determined that no properties present were eligible for National Register listing. No significant changes have occurred to the project area in the intervening years; therefore, no survey is required.

Why the available information provides a reliable basis for reasonably predicting that there are no unidentified significant historic architectural or landscape resources in the project area:

Using HPO GIS website and Mitchell County ArcGIS website provides reliable information regarding the structures in the APE. These combined utilities are considered valid for the purposes of determining the likelihood of historic resources being present.

SUPPORT DOCUMENTATION

Map(s) Previous Survey Info. Photos Correspondence Design Plans

FINDING BY NCDOT ARCHITECTURAL HISTORIAN

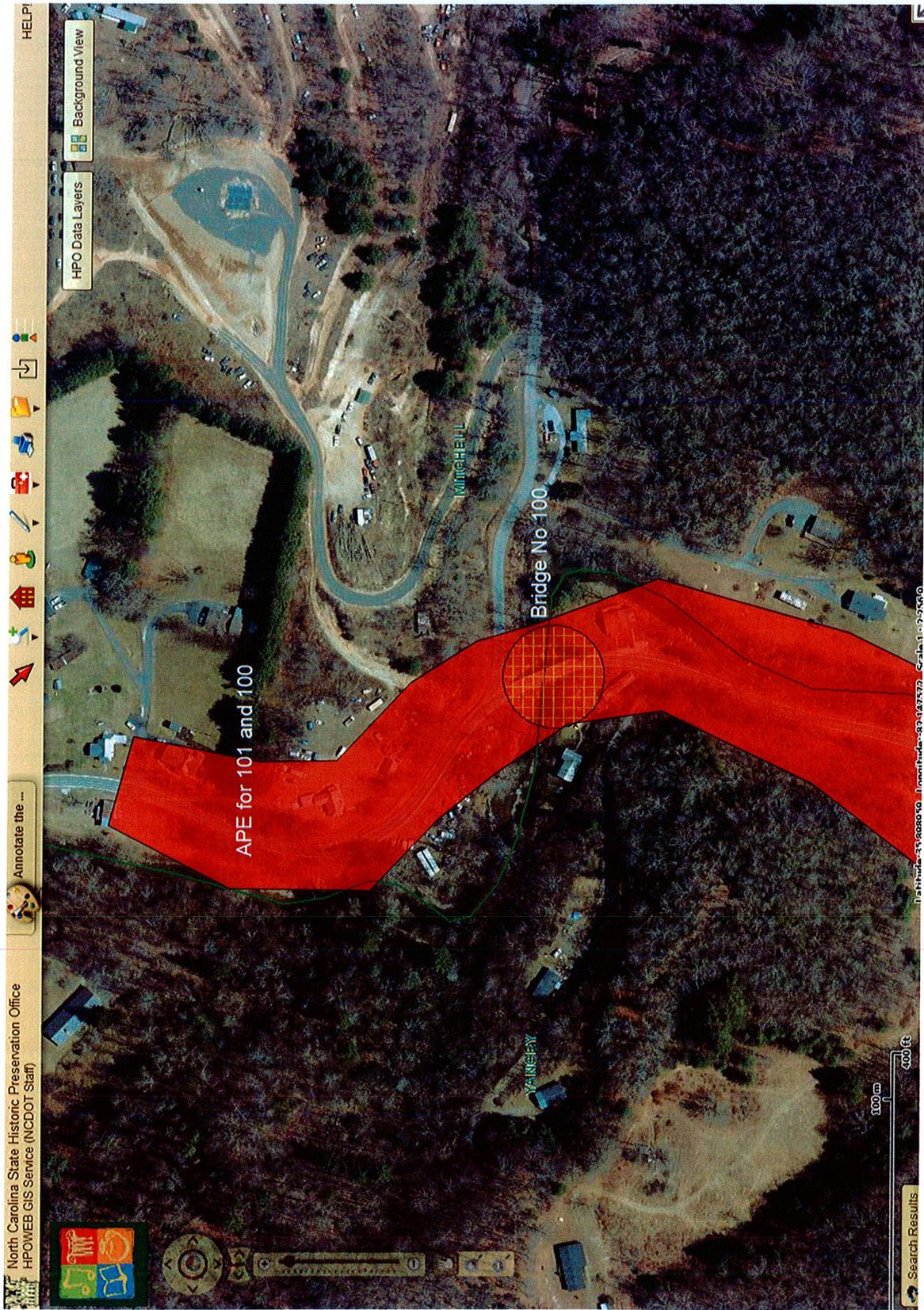
Historic Architecture and Landscapes -- NO SURVEY REQUIRED

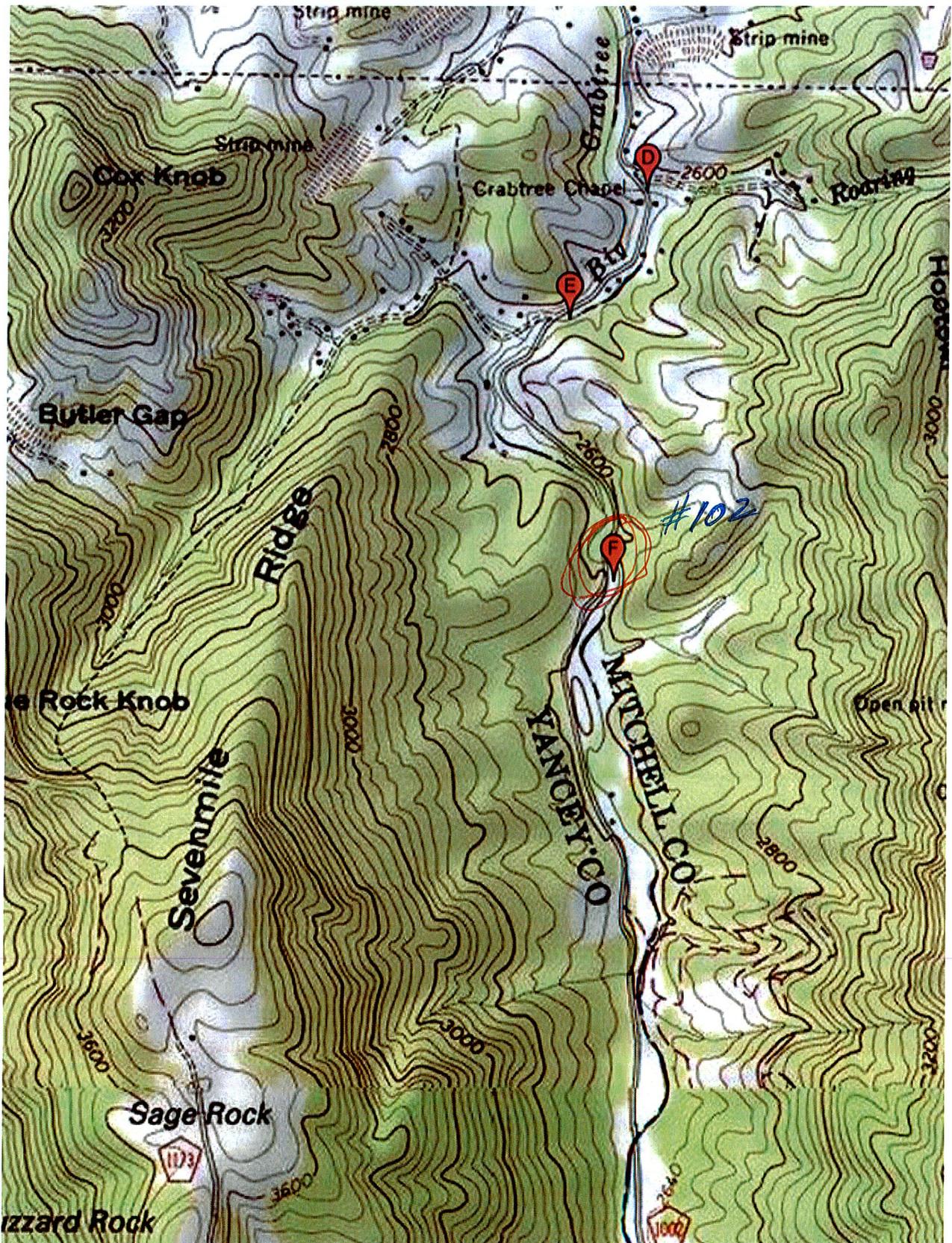
Shelby Reap

NCDOT Architectural Historian

April 2, 2015

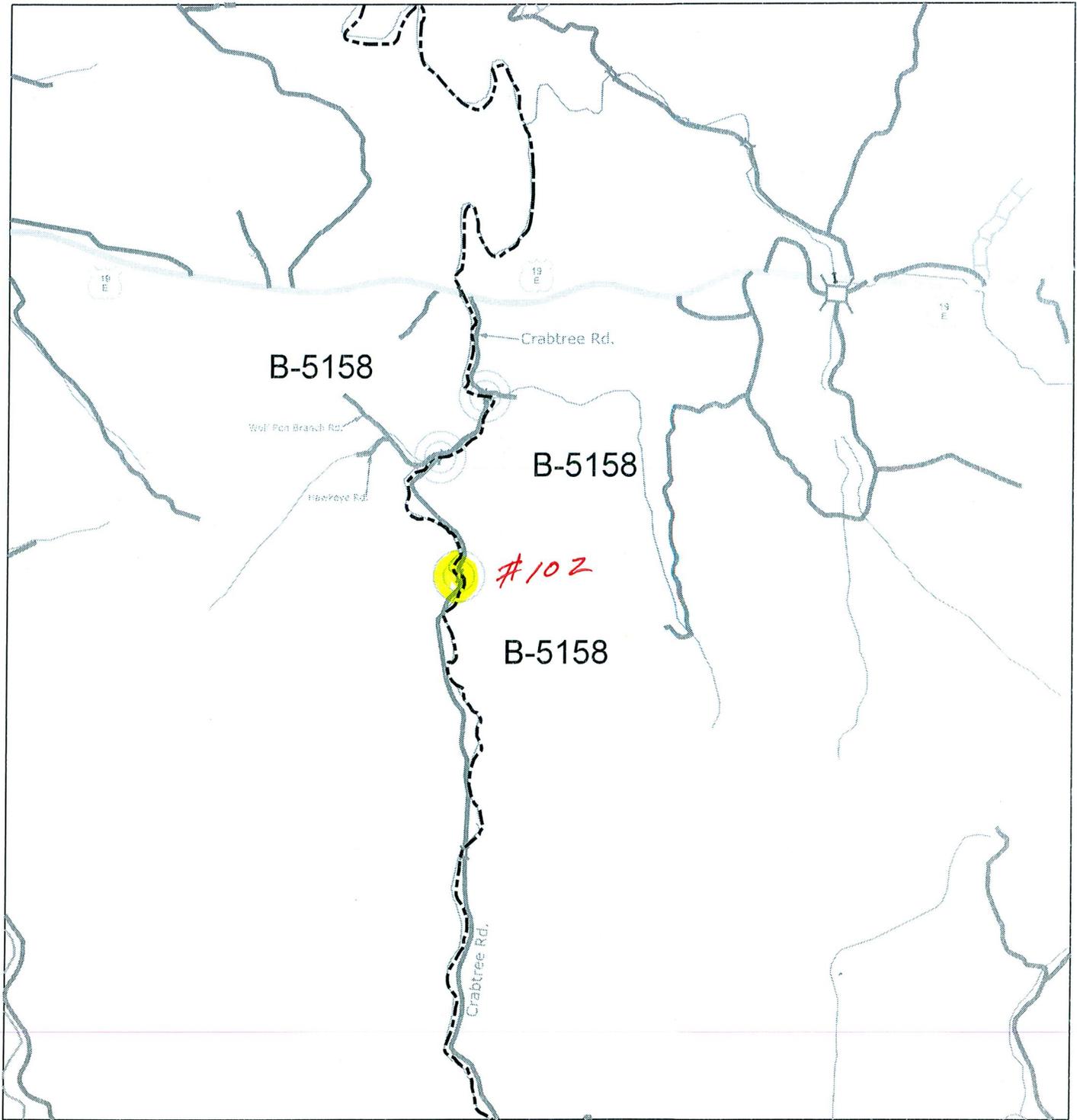
Date





Google

533# /



● — ● Denotes off-site detour



	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS BRANCH
	MITCHELL COUNTY REPLACE BRIDGE NO. 100, 101, AND 102 ON SR 1002 OVER CRABTREE CREEK B-5158

Figure 1